

THE  
ROMANCE  
OF CHEESE





THE  
ROMANCE  
OF CHEESE

Educational Department  
Kraft Cheese Company  
Chicago

Copyright 1940 by  
Kraft Cheese Company

PRINTED IN U.S.A.

# The Romance of Cheese



THE romance of cheese! Strange as the association seems, the story of this ancient and honorable foodstuff is woven into the warp and woof of the history, legend, economics and folklore of all the peoples of the world.

Cheese constituted a means of reckoning wealth among the wandering tribes of Asia and southern Europe before English was a spoken tongue. Cheese was offered to the gods upon Olympus. It is a food with a history which dates back further than any other prepared food now in use, with the possible exception of butter. The Greeks were familiar with cheese-making at the time of Homer. Hippocrates mentions cheese made from mare's milk, and also from goat's milk. Sheep's milk was employed for cheese-making by the early Egyptians. Otesia, a Greek savant living about 400 B.C., in his writings refers to a legend of those days concerning Semiramis, the famous Assyrian queen, who at one period of her childhood was said to have been fed by birds with cheese which they stole from shepherds. This presupposes the existence of cheese about 2000 B.C.

We find the boy David of Bible times carrying rich gifts and dainties to the young warriors in camp and among other things were ten cheeses



for the captain. We find it among the patriarchs and prophets of Bible times, in the palaces of forgotten kings, and at the feasts of Roman emperors. Later, when the great conflict between Mohammedanism and Christianity was in progress, cheese was an important food in the defender's army, and was a part of the booty to be gained by the invading hordes.

Wandering Asiatic tribes brought the art of cheese-making to Europe, where ages later it became one of the most important industries. During the reign of the Caesars, cheese had become a great delicacy and the best of it was brought to Rome from Switzerland. The younger Pliny, and Paladius, Roman writers contemporaneous with Seneca, made many references to cheese in their writings. In fact, data and technical information about cheese-making are given there.

In the years following the fall of Rome, like most other industries, cheese-making in Europe was carried on under the protecting wing of the church, and the peasants were taught the various methods of making cheese by the monks. Secret formulae for making certain varieties of cheese were held as a part of the wealth of monasteries. In fact, even in these modern days, a soft cheese known as Port du Salut, or La Trappe, is made by the Trappist Monks in Northern France. A similar cheese is made by Trappist Monks in a monastery located in Oka, Canada, and is characteristically called "Oka", taking its name from the location where it was first made.

There is a wealth of romance about cheese. In fact its very beginning in pre-historic times has come down through the ages in the legend of Kanana, an itinerant merchant of Arabia who plied his picturesque but lonely trade across the hills of Asia centuries ago. Preparing for a journey, the Asian traveler filled his canteen, made from a dried sheep's stomach, with milk. He started in the cool darkness before dawn, plodding on and on through the furious heat of mid-day. As the journey was long and hazardous, he hastened through the mountain passes, not stopping for his noon-day meal of dried dates and goat's milk. Long after nightfall Kanana stopped, overcome with thirst and weariness, and lifted his canteen to his lips. But no cooling draught of goat's milk slaked his thirst. Only a thin watery liquid came from the canteen. Curious as to what had become of the original contents, Kanana cut open the skin and there, in place of the milk, he found a curious mass of white curd. Hunger and thirst and a true scientific spirit prompted him to taste the semi-hard substance. He found the transmuted goat's milk a delicately flavored food. In his haste, the traveler had selected a sheep-stomach which had not quite dried and in which *rennin* was still active. It was the action of this *rennin* which had curdled the milk.

The legend trails into obscurity here but it is to be presumed that the merchant with the inquisitive turn of mind experimented further with this curious phenomenon, attempting the experiment again and again,

pressing the solid curd into more regular form. At any rate, the results of that early accident soon became well known throughout the East and cheese was so highly esteemed that it became a medium of exchange and barter for the wandering tribes of Asia.

Coming down through the centuries, it was natural that different sections of the globe should develop special methods of cheese-making especially suited to local conditions, and that in the course of time these varying factors of production and climate would result in entirely different varieties of cheese.

The story of the evolution of the world's different cheeses is a fascinating one, compounded partly of historical fact and partly of local legend. Known as the "Cheese of Kings and the King of Cheeses," Roquefort boasts its humble origin several hundred years ago in a cave in the French commune of that name. Roquefort is first mentioned in a chronicle of the Monastery of Conques, of the year 1070. The cheese was produced under the watchful eyes of the monastery brothers until the time of the French Revolution.

The world's first Roquefort was the accidental discovery of a shepherd boy on the Cevennes uplands of France. Tending his flocks, the boy left



- The caves of Roquefort, France, showing the fissures in the cliffs that create the unique atmospheric condition this temperamental cheese requires. Fuller description may be found on page 42.



● A section of the curing room in a modern Camembert cheese plant in America. Temperature, humidity and ventilation are carefully regulated and every possible precaution is taken to bring about perfect curing.



his lunch of barley bread and native cheese made of sheep's milk in a cave near by Roquefort, to keep it cool until noon-time. But his flocks proved wayward, and a sudden storm forced him to drive them to shelter far from the cache where his luncheon awaited him. Passing the cave some weeks later, he thought to look for his abandoned lunch. The barley bread was spoiled, heavy with black mold. The cheese he found veined throughout with a delicate green mold. He took an experimental nibble, and found the cheese delicious beyond any he had ever tasted before.

Since the cave appeared to have some magic property he determined to repeat the experiment, leaving a second luncheon of newly made cheese and barley bread. Returning in about two weeks' time, he found that the interesting phenomenon had again occurred. The cheese was interlaced with a delicate filament of green mold, imparting a strangely delicious flavor. His discovery was repeated by the Conques monks, and the cheese given the name of Roquefort.

Legend has connected another variety of cheese with the name of the great Napoleon. During one of his rapid cross-country trips in the wake of his victorious army, he was served with a most delicious soft cheese at a small-town inn. Upon hearing that the toothsome morsel was merely a local product, with no particular name, he insisted that this hitherto



unknown variety should be called Camembert cheese from the town of Camembert where it was first made, and Camembert cheese it has ever since remained. The story has it that Napoleon stopped to kiss the maiden who first presented him with Camembert. Madame Marie Harel, the peasant woman who originated this famous French delicacy, attained immortality thus, and a statue honoring her stands in the market place of her Normandy village today, to which thousands of Camembert devotees annually journey to pay their homage.

It is the proud boast of the American cheese industry that this most delicious and temperamental of all cheeses is now made in America with such finesse and exactitude that cheese connoisseurs frequently prefer American-made Camembert to that imported from the original Normandy village.

Every civilized country in the world has developed its own distinctive type or types of cheese. In the valley of Emmenthal, Switzerland, the Alpine peasant showed special skill in making the cheese known for more than 400 years as Emmenthaler or Swiss Emmenthaler. By the middle of the 17th century, the production of Swiss Emmenthaler was a well-developed industry, with considerable export trade. This type of Swiss cheese is today manufactured in many countries throughout the world, notably in the United States.

Gruyere Swiss cheese was originally used to designate Emmenthaler cheese made in France. Gruyere was first manufactured in the village of



- A typical Holland wharf scene where Edam and other types of cheese have been one of the chief articles of Dutch commerce for centuries. The many varieties of red-coated Dutch cheeses are known all around the world.

that name in France in 1722 by two cooperative societies organized for that purpose. Gruyere was made in three different qualities, from whole, from partly skimmed, and from skim milk, and since Emmenthaler is made entirely from whole milk, that fact served to differentiate between the two types of Swiss cheese.

Today in the trade, the name Swiss Gruyere, or Gruyere-type cheese, is often regarded as meaning packaged process Swiss cheese. Swiss cheese has been cured with Neuchatel wine. One brand of process cheese pasteurized with added Neuchatel wine is known as Trauben (Grape) Swiss.

Limberg, Belgium, is responsible for the introduction of a cheese which has provided the world, not only with a rare though odoriferous soft cheese, but with a subject for jest wherever Limburger is mentioned. Although the odor of Limburger is the source of much amusement, the inevitable flavor is also the source of much true enjoyment to connoisseurs of fine cheeses.

Holland wharves for many hundreds of years have displayed a picturesque and interesting type of cheese characteristic of Holland cheese manufacture: the Edam and the Gouda, the two principal cheeses of Holland. Both are covered with an attractive, brilliant red coating. Edams are cannon-ball shaped, whereas Goudas are flat, round discs, about three inches thick and ten to twelve inches in diameter.

Italy prides herself on Caciocavallo, a dry, hard cheese, very sharp on the tongue.



• The quaint old village of Cheddar, England, near the city of Bristol, where Cheddar cheese was first systematically manufactured by Joseph Harding, an enterprising and progressive farmer.



Likewise other cheeses derive their names from the places in which they were first made, as for example Parmesan from Parma, Italy, Swiss from the Alpine country, and Romano from Rome.

The little village of Chester on the River Dee, stronghold against the Roman invasion, has produced a cheese famous all over the world. Cheshire cheese was famous in the days of Queen Elizabeth. And in 1825, it is still recorded in English history, the people of Chester presented his Royal Highness the Duke of York with the largest Cheshire cheese made up to that time, a Cheshire weighing 149 lbs. (apparently the original prototype of our present-day mammoth cheeses, which frequently are made to weigh 300, 500, 1000 and even 2000 lbs.).

Cheddar cheese and Stilton have a history and a romance ancient and honorable. The picturesque English studies of Dickens, Thackeray and Boswell mention these sharp and full-flavored cheeses frequently. Famed in song and story, rich in romance and history is the Stilton, with its semi-hard, white, crumbly body, streaked with blue mold. No less celebrated and much more popular is the Cheddar, named for the quaint old village near the city of Bristol, where it was first manufactured by Joseph Harding, an enterprising farmer. He systematized the crude methods of farmers of that section of England, and it was his method of manufacture which became the model for cheese-making in America, where this type of cheese is known as American Cheddar, or American cheese (sometimes called "store cheese").

With a high degree of accuracy America now produces many of the most famous types of cheese produced elsewhere in the world. In adding to these the many packaged cheeses, in forms readily usable and uniform in quality, America has made a contribution which has revolutionized the cheese industry during the recent past.

America, too, has produced several distinctive varieties of cheese, and has added much to the general store of information regarding cheese and its value in the diet. A variety that has large sale in America and has no peer anywhere in the world is Cream cheese. Pineapple cheese is a distinctive American Cheddar type.

#### Velveeta

Another distinctive American development in cheese-making has been the perfection of an American Cheddar cheese food especially suited to the dietetic needs of children, but no less delicious and nourishing for adults.

Cheese has long been recognized as an excellent source of milk minerals, notably calcium and phosphorus. It has also been known, however, that some of these important minerals in milk are ordinarily lost in cheese-making and that the curing process converts the milk sugar content of cheese from its carbohydrate form to other forms. To restore these fractions of milk to cheese was the problem which the scientific labora-



tories undertook to solve. Several years of research and experimentation resulted in the perfection of a method whereby milk minerals and milk sugar could be added back to cheese, with the result that the finished product contains calcium and phosphorus in approximately the same ratio, one to another, as in milk. Throughout the ages, milk has been known as "the most nearly perfect food", and the maintenance of milk's balance of calcium and phosphorus in a cheese food marked an important nutritional development.

In physical appearance this type of cheese food, which has become nationally popular in the past few years, is creamy yellow, looking much



- The packaging room in a modern American process cheese plant. These ingenious machines automatically wrap and seal the cheese in air-tight, dust-proof, sanitary packages. This battery of machines packages over two-hundred-thousand half-pound units daily.

like the familiar American Cheddar cheese. It spreads like butter at room temperature, melts smoothly and quickly, slices when chilled, and possesses a delicious, mild cheese flavor. It is made from selected American Cheddar cheese. After the cheeses are blended, pasteurized and processed, milk minerals and milk sugar are added, in the form of condensed whey. Whey is an excellent source of these elements of milk, and added to the cheese, restores the "milk balance" of minerals and sugar. Added to whole milk American Cheddar cheese, these elements lend still further value to the cheese food as a source of body-building materials. Velveeta is also a good source of Vitamins A and G.

### **Cheese in the United States**

The production of cheese in the United States began with the early settlements, although at that time it was made only in the home or on the farm by crude methods. When European emigrants began coming to America in large numbers, they naturally brought with them their own methods of cheese-making and their liking for the varieties they had known. New York and Pennsylvania, with their large population of English and Dutch colonists, took up the manufacture of Cheddars, Edams, etc., similar to the varieties they had made in their old homes. In like manner the first Swiss cheese-making in America was started by a Swiss colony which settled near Alliance, Ohio.

The first American Cheddar cheese factory in the U. S. was established in Herkimer County, New York, in the middle of the 19th Century by a man named Jesse Williams. Cheese-making soon became an important industry and hundreds of small factories sprang up near the sources of milk supply. Because of increase in production, new pasture land was sought and the tendency naturally was westward. The wide stretches of Wisconsin prairie land, its rolling hills and vast water supply, attracted the cheese-makers, and American Cheddar, Swiss and Limburger cheese factories sprang up throughout the state. The development of the industry there was so rapid that Wisconsin soon became the leading cheese state in the Union, surpassing New York in production. Today there are more than 2800 country cheese factories in the state of Wisconsin and they make more than 58% of all cheese manufactured in this country.

The Wisconsin Swiss cheese industry, too, grew so rapidly that Southern Wisconsin became known as the "Switzerland of America" and the descendants of these one-time Swiss highlanders are now producing a cheese equivalent in quality, texture, flavor, and appearance to the finest product ever made by their forefathers.

The making of cheese in the home has practically ceased in the United States and the production of commercially-made cheese which has taken its place now exceeds 600,000,000 pounds annually.

In 1937, the seven most important cheese-producing states of the Union,



in the order of their importance, were as follows: Wisconsin, New York, Illinois, Indiana, Oregon, Texas, Minnesota and Michigan. Cheese is produced in substantial quantity throughout the United States today, and in virtually every state.



- Kanana, the legendary merchant of Arabia whose hasty journey at the dawn of history resulted in the discovery of cheese, may well have appeared as shown in this "still" from a moving picture depicting the story. See page 4.



# America's Diet Opportunity: Greater Use of Cheese

FROM the day cheese was discovered, people have eaten it because they found it good—a delicious and appetite-intriguing food flavor.

Different peoples, in different ages and nations, have eaten it in varying quantities, from the Swiss to whom cheese is a staple food—one of the chief items of diet—to the English, who must have a savory whose principal ingredient is cheese to add the final touch to a meal. All nations of cheese-lovers have developed varying tastes in cheese and have created a variety of cheese dishes.

Though so much has been spoken and written of cheese, though it has played an important part in international diet, it remained for the past few years of cheese-making in America to develop scientific data concerning the true value of cheese as a food. This is one of America's distinctive contributions to the industry.

There was a time in this country when a superstition existed to the effect that cheese was a food difficult to digest. Exhaustive tests have shown that the contrary is true. Cheese is made up of the nutrients of milk, all completely digestible. The U. S. Department of Agriculture, Bulletin 1207, states, "As regards thoroughness of digestion, a very large number of experiments carried on by the Department of Agriculture have shown that when consumed even in relatively large amounts, cheese is very thoroughly assimilated. Furthermore, it caused no physiological disturbances in the large number of tests in which it was used."

Cheese is an important food in the diet of human beings because it is essentially a concentrated form of milk. In milk—and equally in cheese—the muscle-building material, protein, is of recognized value for the proper nourishment of children and adults. Cheese is one of the most highly concentrated sources of protein known, from 20% to over 30% of its total weight being tissue-forming elements.

The mineral elements, calcium and phosphorus, are indispensable to the building of bones and teeth. Milk is one of the best food sources of these minerals. Cheese is also an excellent source. Cheese is also a good source of Vitamin A, present in butterfat. Because it is a concentration of milk

nutrients, the fuel value of cheese per unit of weight is very high. One-half pound of American Cheddar cheese, for example, furnishes more than 1000 calories, or about half the daily energy units required by the average adult leading a quiet life.

Average American Cheddar cheese contains approximately 25% protein, 30% butterfat, 40% moisture, the balance of the total being chiefly milk minerals and lactose, or milk sugar.

### **Use of Cheese in the Menu**

Although the food values of cheese recommend it highly from the standpoint of dietetics, it is the infinite and delightful variety of uses of cheese in the menu which make it most pleasing to the appetite. Almost every variety of cheese produced anywhere in the world is produced in the United States. These cheeses number into the hundreds. They range from soft, mild-flavored Cream cheese to hard, sharp-cured American Cheddar. Included in the array are Camembert, Brick, Limburger, the familiar American Cheddar, Swiss, Italian styles, Roquefort-type cheese, to mention a few favorites, in addition to several types distinctively American.

Each of these cheeses has its own values in the menu. When men think of cheese, they think most often of a square of golden American Cheddar cheese served with pie. But the American custom of serving cheese with pie is only the beginning of a multitude of cheese services.

Cheese is not only a tid-bit, an enhancer of other foods, but is an integral part of many dishes. There are cheese fondues, soufflés, cheese and vegetable combinations, cheese with noodles and with rice or macaroni. And there are cheese dishes for luncheon, dinner and supper. The simple, sophisticated European custom of serving a variety of cheese with a fruit dessert, a beverage and crackers is one which is growing more and more popular in America.

Twenty years ago the American housewife knew but few kinds of cheese — the most popular of which were the "bulk" variety, which she purchased in the corner store, and cottage cheese which she made in her own kitchen. "Store cheese" she called the wedge of ruddy American Cheddar, the only type known to her of the many cheeses which are as varied as the countries which have produced their distinctive types.

Today, however, the whole realm of cheese in almost endless variety, with many uses in the diet, is available to her at her market-place. American housewives are learning more about cheese, its dietetic values, its economy and goodness, than ever before in our history.

The uniform quality and increasing variety of packaged cheese, which make the cheese delicacies of the world so readily available to her, are generally recognized as responsible to a large degree for the growing interest in cheese and its uses in the menu. It has been their uniform, high quality which, to a great extent, has brought about an 80% increase in the per



capita consumption of cheese in the United States within the relatively short period of 20 years — when it increased from slightly over 3 pounds per capita to 5.4 pounds per capita.

Considered from the standpoint of food value, flavor, easy assimilation and economy, cheese is an excellent food. To gain the full value of it in the diet, we must consider it from the standpoint of its rightful place in a well-balanced meal, rather than as a condiment for flavor only. Cheese should be used often, in combination with other foods, as the main dish of the meal, and whenever utilized in this way, other concentrated protein foods should be eaten in very small quantities, if at all.

Because cheese is a food of highly concentrated nutriment, it should be combined with other foods containing a high proportion of indigestible bulk. Leaf and root vegetables, and to a certain extent all fruits, serve this purpose. Carbohydrate foods lend themselves well to use with cheese, as the properly balanced diet requires more carbohydrates than protein, and cheese is essentially a protein food.

### Whey

Little Miss Muffet eating her "curds and whey" is a familiar figure in the favorite literature of childhood. But though the value of whey in the diet

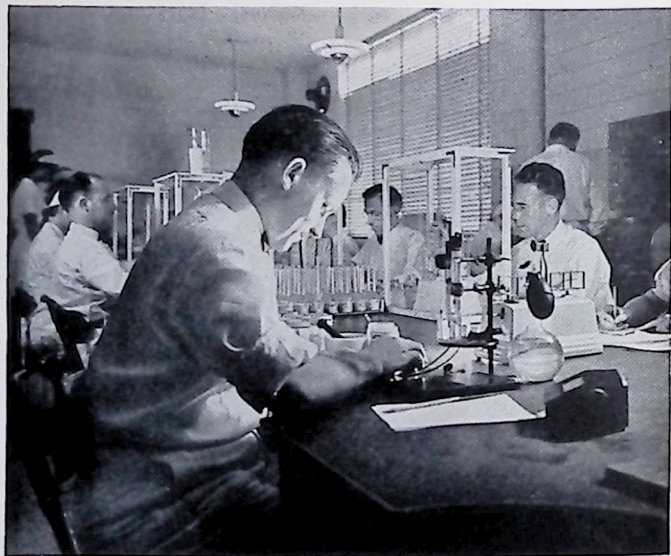


- The Cheese Tray, the latest vogue for the service of cheese. Fine native cheeses . . . rare imported varieties . . . all on a single tray. The pattern of this charming custom is variety, to suit all tastes.



of human beings has been known for many hundreds of years, modern science has done much to determine just what those values are, and how they can be made available. At one time in the history of cheese-making, indeed until recent years, whey left over after the curd was extracted for the making of cheese was discarded as a waste product. Today cheese-makers realize that in whey reside some of the valuable mineral elements of whole milk. The discovery of a method whereby water may be scientifically evaporated from whey, leaving only the whey solids in a powdered form, has made the nutritional benefits of fresh sweet whey more generally available.

Dried cheese whey is a concentration of milk sugar, milk minerals, milk protein. It is a good source of Vitamin G, one of the vitamins essential to the maintenance of normal appetite and growth. Milk minerals are important for the building of strong teeth and bones in childhood, and valuable for their maintenance during adult life.



- Scientific control plays an important part in modern cheese-making in America. Working together, skilled cheese-makers and trained laboratory experts have greatly improved quality and flavor.

# The Many Varieties of Cheese and How They Are Made

CHEESE may be roughly divided into two general classes—those in which the curd is produced through the action of *rennet*, and those in which it is formed by means of *lactic acid*.

At the touch of rennet, milk casein coagulates, drawing together in a more or less solid mass. The semi-solid mass is the *curd*. The watery substance which remains, containing only completely dissolved milk substance, is the *whey*.

Countless varieties of cheese are produced through the action of rennet upon milk. Differences among these varieties are due to several factors—difference in the source of milk, whether from the cow, goat or sheep; the amount of moisture retained in the curd; the amount of salt and the nature of certain spices or other materials added; the size of the finished cheese; temperature and conditions of ripening; the presence of certain organisms, particularly molds and bacteria which are in some cases intentionally added, and in others normally present under the conditions of manufacture.

Almost all varieties of cheese are produced by the rennet method. A notable exception is Cream cheese, a so-called *uncured* cheese. The curd for Cream cheese is usually produced by the lactic method. By the lactic method, curd is produced through precipitation. Pure cultures of lactic acid bacteria are added to milk. These cultures are known as *starter* because they provide the means to *start* the conversion of lactose (milk sugar) to lactic acid. After the addition of this starter the milk is permitted to stand for several hours until precipitation takes place. During this process, the milk is kept in large covered vats maintained at a temperature which will encourage the rapid growth of the lactic acid bacteria.

These fundamental chemical phenomena upon which cheese-making depends, are natural phenomena, but science carefully controls and regulates them in the process of cheese-making.

Through the exercise of care in every stage of the cheese-making operation, from the handling of fluid milk to the curing and preparation for

marketing, cheese-making has become one of the most exact of manufacturing sciences. Unceasing experimentation and careful control of all factors involved have been responsible for producing the almost endless varieties of cheese which are made in the world today.

### Three General Types of Cheese

In a general way, cheese may also be divided into the *hard* and the *soft* types, the principal difference between them being in the amount of moisture or whey left in the curd, the bacteria or mold used to produce their characteristic flavor, and their method of curing.

The most common types of hard cheese are the Cheddar and Swiss. The soft types are represented by Cream, Brie, Camembert, etc. Between these two groups are varieties which may be characterized as semi-hard, such as Brick, Muenster and Limburger.

As a rule, in the hard cheeses, the micro-organisms which produce the *ripening* are distributed through the cheese mass and therefore act in a fairly uniform way throughout the cheese. In the ripened soft cheeses, these organisms are mostly on the surface and gradually penetrate through the mass; hence it follows that soft cheeses must be made in small sizes. Cream cheese is an unripened soft cheese, being marketed fresh, without curing.

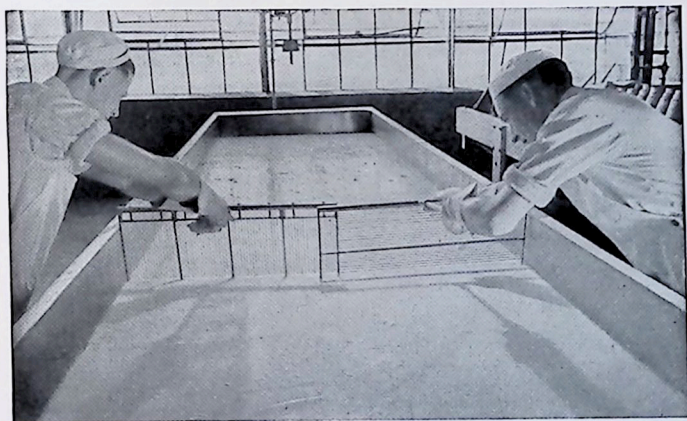
From the description of American Cheddar cheese-making which follows, it is apparent that it is the lactic acid bacteria which are largely responsible for the resultant product. In general it may be said that the first stages in the process of making the different varieties of rennet cheese are much alike. It is in the latter stages of ripening, with the consequent development and action of bacteria, that the changes occur which make the great difference observable in texture, body and flavor.





# A Trip Through an American Cheddar Cheese Factory

IN modern American cheese factories, the milk is received from the surrounding farms early each morning, being delivered either in huge tank automobiles or in the familiar forty-quart cans. It is first weighed, after which a sample of each can is taken for analysis. The milk next flows to the large vat in which the first steps of cheese-making take place. These vats contain approximately 10,000 pounds or 4,700 quarts of whole sweet milk, which ultimately produce approximately 1,000 pounds of cheese; that is, it takes ten pounds of milk to make one pound of cheese, the cheese being largely the solid part of the original milk. The milk is warmed to a temperature of 86° F. by letting steam into the



• Liquid milk becomes curd and whey. After starter and rennet are added, the milk forms into a soft curd, much like "Junket". The curd is then cut into small cubes ( $\frac{1}{4}$ " ) by special wire knives. The photograph shows the cutting operation. Note horizontal and vertical wires.

● *Ditching* to drain off the whey. After heating and stirring, the curd is permitted to settle and the whey is drained off. The curd is drawn to the sides of the vat to permit thorough, rapid draining.





jacket which surrounds the bottom and sides of the vat. A lactic acid starter or culture is added to the milk and thoroughly stirred in by automatic revolving paddles. After this a pure vegetable coloring is added which gives the attractive yellow color to American Cheddar cheese. This coloring is omitted in White American Cheddar.

Next the rennet is added to hasten coagulation — about three ounces of rennet extract diluted in forty times as much water is used to 1,000 pounds of milk. Once again the automatic paddles are actively engaged for three to five minutes, in thoroughly distributing the rennet.

The milk is then left undisturbed and begins to coagulate in from 15 to 20 minutes. In about 30 or 40 minutes, when the milk is sufficiently clabbered or the curd is quite firm, it is ready to cut. The purpose of cutting the curd is to allow the whey to escape from it. Cutting is accomplished with curd knives, first vertically from one end of the vat to the other, and then cross-wise, resulting in the formation of many thousands of small cubes of curd approximately one-quarter inch in size.

The small pieces of curd are then kept floating in the whey by gently stirring with paddles to prevent the curd from settling and packing in the bottom of the vat. During the active stirring and gentle heating the proper body and acidity develop in the curd. The whey is then drained off, leaving the curd at the bottom of the vat.

The next operation is known as *ditching*, when the curd is drawn to



• *Cheddaring* for body and texture. When *ditching* and *draining* are complete, the curd is cut into large slabs which are piled as shown in the photograph. This operation is called *cheddaring* and is repeated several times until the desired body is obtained.

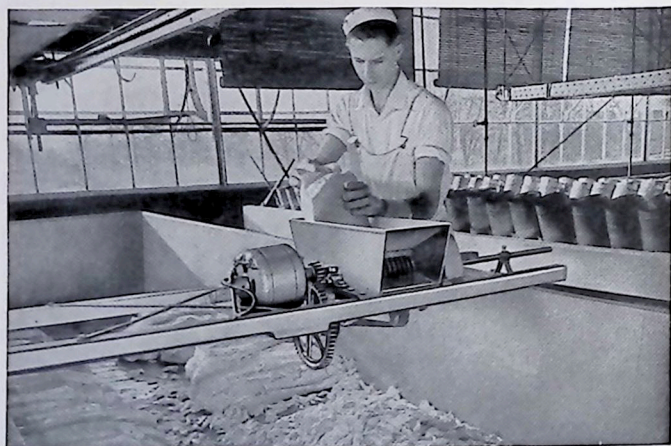


the sides of the vat to allow thorough drainage, through the *ditch* which is left between the masses of curd.

*Cheddaring* the curd — the next step — is the main distinctive feature of the cheddar method of cheese-making. It is variously styled the *piling*, *matting* or *cheddaring* of the curd. After the curd has been allowed to stand from 10 to 15 minutes, (after the whey has completely drained off) it is cut into large pieces which are turned again and again and piled on top of one another in order to expel any free whey that may remain in the curd. These pieces are next cut into strips and put through a *milling machine* which breaks up the matted curd into small particles.

The mass of curd is then salted and again thoroughly stirred so the salt will be evenly distributed. Approximately two pounds of salt are used to one hundred pounds of curd. After salting, the curd is cooled to about 80° F. and is now ready for packing in the *hoops* in which it is to be pressed into shape. Before the curd is put in, the hoop is lined with a cheesecloth known as a bandage. This cloth remains on the cheese when it is taken out.

The hoop is usually a cylinder, heavily tinned, with a wooden or metal plate called a *follower* on which the pressure is applied. The hoops are slightly tapered so that one will fit into the other, in order that a horizontal press may be used and a row of ten or fifteen hoops can be pressed in one



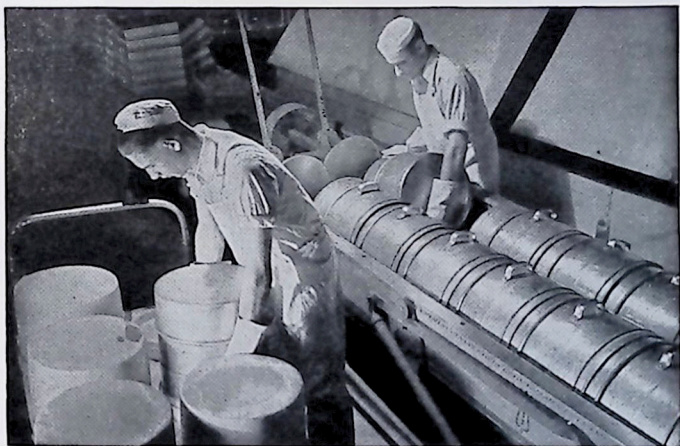
- When *cheddaring* is complete (judged by the firmness and texture of the curd) the curd is cut into small pieces in preparation for salting and pressing (for eighteen hours) in cheesecloth lined hoops of the desired size and shape. The cloth remains on the cheese.

operation. The press most commonly used is known as the continuous pressure type. The weight of the cheese, through a cantilever arrangement, exerts a constant pressure against the end plate, hence the term.

#### Varying Shapes, But All American Cheddar

There are a number of shapes into which American Cheddar cheese is molded—the same cheese, with no apparent reason for the variety of shapes. These various shapes are known as Longhorns, Prints, Daisies, Flats, Twins, Cheddars, etc. A factory is usually equipped to make several styles, some factories specializing in particular kinds. The latter three sizes or shapes were most popular until the advent of pasteurized-blended process cheese in loaves and packages.

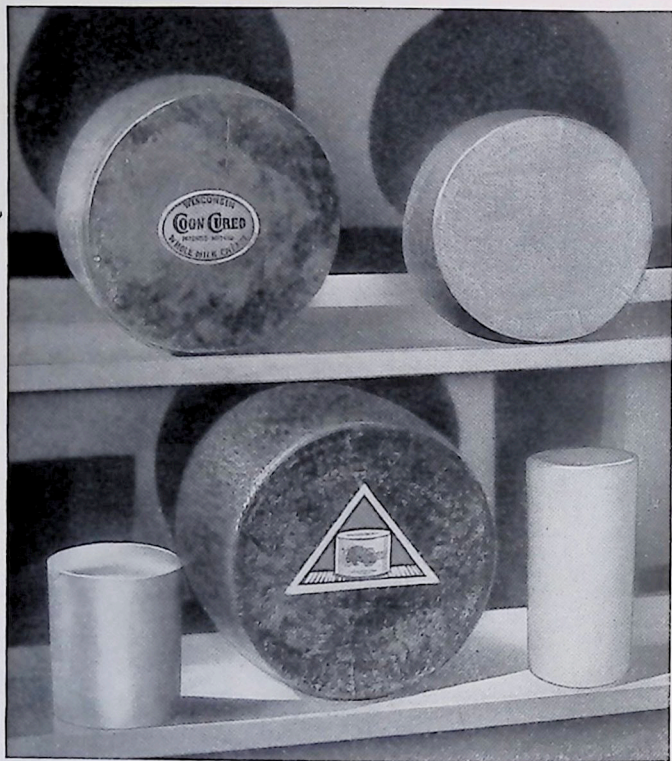
After remaining in the press for eighteen hours the cheese is taken out of the hoop and placed on shelves in the curing room, where an even temperature must be maintained. A temperature of about 70° F. is considered best. After the cheese has been on the shelf for a week or more it is shipped to large concentrating warehouses where it is held until ready for market and where *curing* and *ripening* proceed, as the cheese is held either in boxes or on shelves. In some instances country factories cure and market their own cheese. This curing period varies from two



- Removing American Cheddar cheese from the hoops after eighteen hours of pressing. These are the Cheddar size and shape, weighing about sixty pounds each. Other sizes are Daisies, Longhorns, Young Americas, Flats, Prints. From here they go into storage for curing.



- Popular American Cheddar cheese sizes, shapes and specialties. Top left, Wisconsin "Coon-Cured" Flat, (30 pounds); Top right, Daisy (20 pounds approximately); Lower left, Young America (7 pounds); Center, "Coon" Cheddar (60 pounds); Right, Longhorn (9 pounds). "Coon" cheeses bear the name of the originator.



or three months to two years, depending upon the degree of curing desired. The longer the curing period, the sharper, richer, and fuller the flavor developed.

In any of its traditional forms — Daisies, Longhorns, Cheddars, etc., the body, flavor, and texture of American Cheddar cheese is protected by a natural *rind* which is formed during the curing period. Once this rind is cut the cheese rapidly dries out and frequently molds. When controlled, mold performs important functions in the curing of some varieties



of cheese, but in the case of American Cheddar which is not mold-ripened, its presence inside the rind rapidly destroys the edibility of the cheese.

For many years, therefore, attempts were made towards the solution of this problem — the perfection of a form of cheese which would reach the consumer in uniform, good condition, without rind or waste and protected at every stage of its distribution by being sealed in sanitary packages. Early records show that cheese which might be produced in a rectangular shape, cut one pound to the inch, was suggested as early as 1890. Several unsuccessful attempts were made between that period and 1904, although in general the old-fashioned Cheddar-size cheese, or its many variations, was constituting the bulk of the American Cheddar cheese production at that time.

### **Packaged, Pasteurized Cheese**

It was during this year that James L. Kraft came to Chicago and started in the cheese business with a single horse and wagon in much the same manner as the other distributors of that time. He was inspired, however, with the idea that a way could be found to manufacture and package cheese



- American Cheddar cheeses in a modern curing room, where temperature and humidity are scientifically regulated throughout the long curing period, to provide optimum conditions for the development of superior flavor.

- Blending many lots of cheese skilfully is the only method of obtaining uniformity. Master cheese blenders test, taste and blend many cheeses, combine them in the right proportion to attain the desired flavor, body and texture in pasteurized, process cheese.



scientifically. Pursuing this idea and experimenting with it continually, the exact method was finally worked out, perfected and tested by Mr. Kraft. The business which he founded has meanwhile expanded until it is today the world's largest cheese business, built upon his development of the blending, pasteurizing, processing and packaging of cheese, important steps in modern manufacture and marketing.

During the early days of the World War, Mr. Kraft had perfected a method for the manufacture of pasteurized cheese, packaged in hermetically sealed tins — the first successful pasteurized cheese in the world. "Cheese in tins" was shipped to the allied armies around the world during the duration of the war. Following the introduction of cheese in tins, the now famous five-pound loaf made its appearance in American markets. The new process cheese, free from rind and waste, possessed a high keeping quality, and a uniform flavor and texture, which brought it immediate popularity on the American market.

The five-pound process cheese loaf was followed by half-pound and



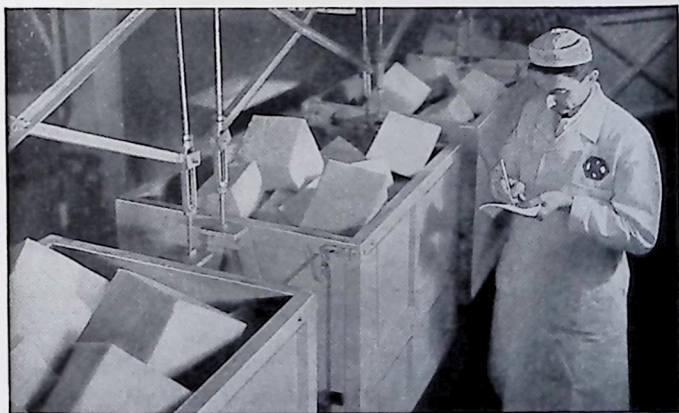
quarter-pound packages, and the years following, several different varieties of cheese were first processed and packaged. Included among these were Swiss, Limburger, Pimento-American Cheddar and Brick.

The manufacture of pasteurized-blended process cheese follows very definite scientific methods. The milk is first made into cheese according to the methods detailed above, in small cheese factories located centrally in the dairy sections so the milk may reach the factory promptly, while it is fresh and sweet.

### Curing

Within a few days after American Cheddar cheese is made it is placed in cheese boxes and shipped to large central warehouses for *curing*, during which the characteristic flavor develops and the cheese gradually attains a relatively soft, buttery texture and a mildly sharp nut-like flavor. During the curing period, cheeses are turned regularly in order to aid uniform *ripening* or *curing*. They are also inspected regularly in order to keep accurate check on the progress of flavor development.

This curing and flavor-development is entirely natural, but during recent years one large manufacturer has discovered that by providing optimum curing conditions in the curing room and maintaining them with scientific precision throughout the curing period, a new rich fullness of flavor can be attained in American Cheddar cheese. In huge, specially constructed



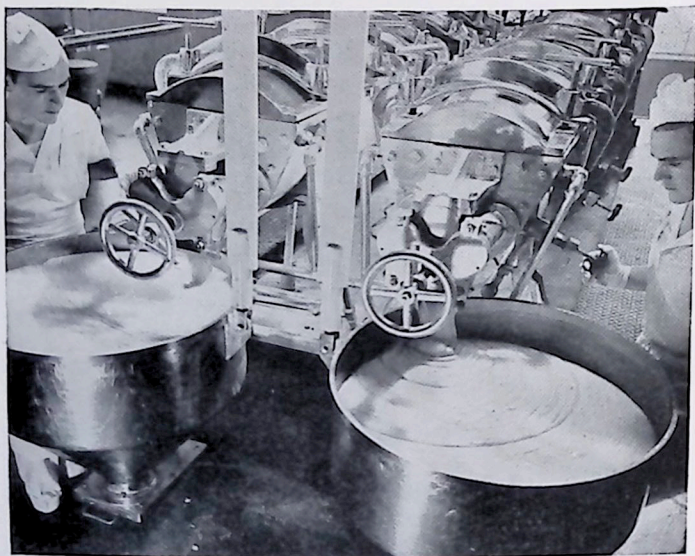
- The final check before pasteurization. Exact fractions of many cheeses selected by the blender have been combined in each batch. He gives the final O. K. after the cheesecloth *bandage* and the rind have been removed. The cheese is then *shredded*.



warehouses, temperatures are controlled precisely. Ventilation and humidity are regulated with scientific accuracy. American Cheddar cheese cured under these controlled conditions develops a fine richness of flavor and a superior texture.

#### Blending, Pasteurizing and Packaging

After proper curing, various lots of cheese are blended together—highly cured cheese with other cheese cured for lesser periods. Skilled blenders examine the cheese in each *lot*, identified by a factory number, to determine its exact flavor and texture. At the same time laboratory tests determine its moisture and butterfat content. This examination and testing is one of the most important steps in the production of pasteurized-blended cheese, for however carefully cheese may be made, it always varies to some degree in flavor and texture. The skill of the blender, backed by laboratory tests, makes it possible to produce a cheese of uniformly fine flavor, texture and consistency, by combining just the right proportion of the various lots. To assure ample supplies for blending, manufacturers must maintain huge stocks of millions of pounds of cheese.



- After shredding, the cheese is blended and pasteurized. The photograph shows one of several pasteurizers in a blending and pasteurizing plant. It has a capacity of 90,000 pounds daily.

• Immediately after processing and pasteurizing, the cheese is packaged—in quarter-, half- and one-pound packages, in 2-pound and 5-pound boxes. This picture shows the packaging of two-pound boxes.

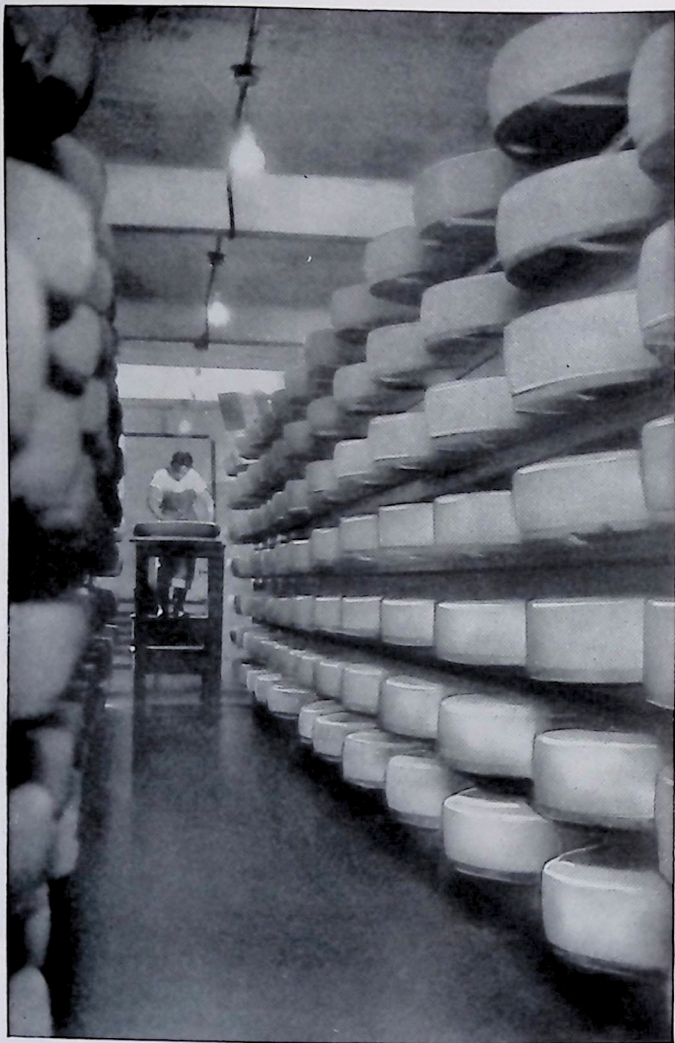


After the blender has determined how much of each lot is to be used in a particular batch, the natural rind and the cheesecloth are removed and each of a large number of cheeses which he has selected is cut into convenient-sized pieces. These pieces are then combined in the correct proportion to produce the standard flavor, body and texture. A small percentage of an emulsifier such as sodium phosphate or sodium citrate is added to aid in retaining the desired body and texture. The cheese is then shredded and pasteurized by automatic machines and packed in sealed containers. Practically the entire process is performed by automatic machinery, down to the folding of the wrapper on the top of each package in its final sealing.

The blending and pasteurizing method is essentially the same for American Cheddar, Swiss and all varieties of cheese marketed in this form. The other varieties are first made according to the varying methods which produce them, and cured in accordance with their own requirements.



• Part of a Swiss cheese curing room where Swiss wheels are held for several months to cure and develop flavor. Temperature, humidity and ventilation are scientifically regulated.





# How Choice Swiss Cheese Is Made in America...

ONE of the largest Swiss cheese producing areas in the world is located in Greene County, Wisconsin. Here the rolling pasture-land and fresh-running streams approximate the dairy country of Switzerland. And here may be seen throughout the countryside large herds of Brown Swiss cattle, as well as the more familiar Holsteins. A population composed largely of Swiss, skilled in the art of producing this particular type of cheese, practice Swiss cheese-making in small factories located throughout the county. Illustrated on this and other pages are several scenes showing some of the steps in the manufacture of Swiss cheese which demonstrate the care with which Swiss cheese is made in America.

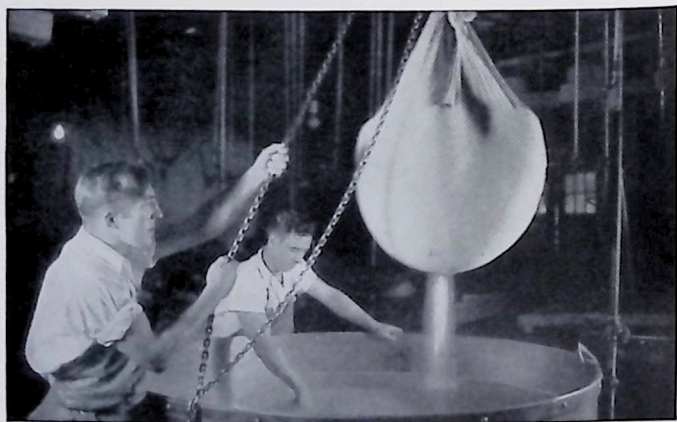


- A master cheese-maker on a check-up round in a U. S. Swiss cheese plant. The curded milk is being cut with what the cheese-maker calls a "Swiss harp". This is one of the first steps in Swiss cheese making.

Early each morning the fresh sweet milk is brought from neighboring farms. Shortly after its receipt the milk is brought to a uniform temperature in great copper kettles which hold approximately 3,000 pounds (1,500 quarts) each. Many of these great kettles are required in order to take care of the large daily milk receipts, for milk delivered each morning must be converted into cheese before nightfall.

Into each of these kettles is put a *starter* made from milk, cultured with bacteria of the well-known "bulgaricus" group. These bacteria perform important functions in the ripening of Swiss cheese and possibly are more familiar in many forms of milk drinks which are marketed throughout the United States under various names, among them "acidophilus" milk, etc.

Shortly after the addition of the starter, the milk forms a soft curd, similar in appearance to "Junket". It is then ready for the next step—that of cutting. This is done either with curd knives or a "Swiss harp" until the curd is broken into small pieces about the size of grains of wheat. As soon as cutting is completed, the contents of the kettle, which is now *curd* and *whey*, is stirred with a circular motion by a breaker or *vein* which is inserted in the kettle. At the same time the temperature is raised to a point between 120° to 140°. As the stirring progresses the particles of curd become firm and smaller in size and completely separated from the liquid whey. With the exception of the difference in the variety



- When the curd is perfectly formed it is removed from the vat in a special sterilized cloth, then transferred to the pressing table. Just enough curd is obtained from 2,500 pounds of milk to make a wheel of Swiss cheese, which ordinarily averages two-hundred pounds.



of the starter used, this initial step in Swiss cheese manufacture is similar to that of American Cheddar cheese-making.

When this part of the method is complete, large squares of special cheesecloth are inserted beneath the curd in the kettle and gathered into a cheesecloth bag, by drawing the corners together. The curd is then lifted from the copper kettle in the cloth bag by means of special equipment.

After the whey is permitted to drain off, the curd is placed in wooden molds or hoops of the exact size and shape of the familiar Swiss cheese wheel.

For the next twenty-four hours the cheese is kept in the hoop and placed under pressure, being turned frequently to aid in the formation of a strong uniform rind. At the completion of the pressing the wheels are ready for salting which is accomplished by permitting them to float in a salt brine solution for three days. During this period salt is also sprinkled on top of the wheels.

Upon completion of the salt bath the long ripening period begins, during which the characteristic firm texture and nut-like flavor of Swiss cheese develop as well as the distinctive physical characteristic of Swiss cheese — the holes, or *eyes*, as they are known in the industry. In the best cheeses of this kind the eyes are uniform, nearly round in shape and about the size of a quarter dollar.



- The actual beginning of a wheel of Swiss. The curd is placed in the hoop and, after a cover is applied, is pressed for eighteen hours. This operation expels any remaining whey. After pressing, the cheese is ready for the salt bath, in which it remains three days.

In making Swiss cheese, the action of the lactic acid bacteria is much less pronounced than in making Cheddar cheese, while the fermentation during the ripening process is of a different type and produces thus a different flavor. The characteristic eyes or holes peculiar to this type of cheese are developed at this time through the agency of one of a group of propionic acid-producing bacteria. The only reason for the undue prominence given by Swiss cheese connoisseurs to the shape and size of the eyes is the fact that these indicate the state of ripening the cheese has attained and therefore to a certain extent, its flavor.

In the popular pasteurized-blended or process Swiss cheese the eye formation is not present because in pasteurizing and blending to produce uniformity of flavor and texture, the eye formation is lost, although the cheese from which pasteurized-blended process Swiss cheese is made is selected for quality and, before blending, does have the eye formation.

### Sap Sago

Another variety of Swiss cheese is sometimes called Green Cheese because of its green color, imparted by dried leaves from a clover-like plant which are pounded through its body. It is harder than Emmenthal, and very good for grating because of its low moisture content.



- Ninety two-hundred-pound Swiss wheels (three deep) in a salt bath at an American Swiss cheese plant. The wheels float in a salt brine solution for three days, after which they are transferred to curing rooms.



# The More Popular Soft Cheese Varieties

CHIEF among the strictly soft varieties of cheese are the Brie, Camembert, Neufchatel, and Cream. These types of cheese are all more perishable than the hard varieties, some of them requiring constant refrigeration in order to keep for even a few days. Cream cheese is by far the most popular.

## How Cream Cheese Is Made

THE method of making Cream cheese differs as widely from those of Swiss cheese and American Cheddar cheese manufacture as the creamy richness of Cream cheese itself differs from the mellow richness of fully-cured American Cheddar or the nut-like flavor of Swiss. The trio illustrate how varied methods of manufacture produce the many types of cheese, although they are all made from milk. American Cheddar and Swiss are *hard, ripened* cheeses, made by the rennet method, whereas Cream cheese is a *soft, unripened* cheese, made essentially by the lactic method.

As its name implies, the smooth, creamy richness of Cream cheese comes directly from the fresh, sweet milk and cream from which it is made. As in the case of American Cheddar and Swiss Cheese, Cream cheese plants are located in the heart of dairy sections, where farmers deliver their daily milk production early each morning. The milk is then enriched by the addition of freshly pasteurized sweet cream and the mixture is pasteurized in large, specially constructed vats. When pasteurization is complete, the rich milk and cream mixture is cooled and laboratory-cultured starter is added to aid uniform curding and the production of a smooth texture for which Cream cheese is noted. Coagulation (or curding) and *setting* proceed for eighteen hours, during which time the mixture is held undisturbed at uniform temperature in covered holding vats.

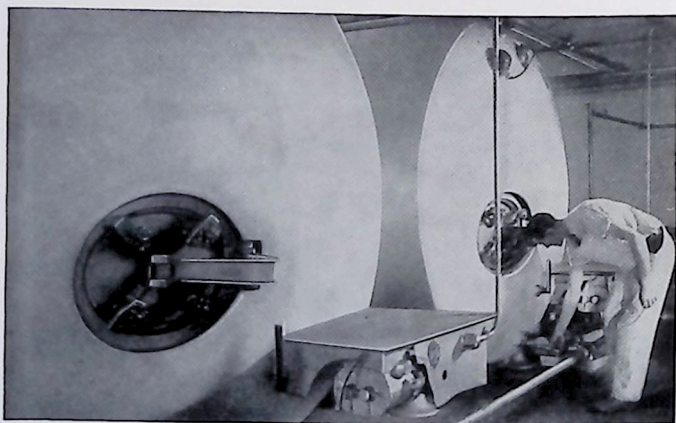
At the end of this period, the Cream cheese curd is completely formed. The curd is poured onto sterilized, closely woven cheesecloth to drain the whey from the curd. After a few hours the cloths are drawn together

and tied at the top, forming a sack in which the curd is held while pressed between cracked ice overnight. In the morning the chilled curd is pressed and salted. Then a machine works the cheese to perfect smoothness.

Almost as perishable as the milk and cream from which it is made, Cream cheese must be marketed with the same care and exactitude. After packaging it is rushed to grocers, protected by refrigeration. Cream cheese is usually sold either in small packages or from the two-, three- or five-pound loaf, the former being considered by far the best way to buy it, because of its convenience and of the assurance of sanitary protection during every stage of distribution.

Most popular of all packaged cheeses, "Philadelphia Brand" Cream Cheese is wrapped in its protecting foil wrapper by ingenious machines which perform this delicate, difficult operation with superhuman skill. Among the oldest of all packaged foods, it was first placed on the market in 1885 in response to a demand for a Cream cheese of superior quality.

Distinctly an American development, Cream cheese has grown tremendously in popularity since the turn of the century. Its ready adaptability to a wide variety of table delicacies and its high nutritional value have made it a prime favorite throughout the nation. Cream cheese has all of the vitamins contained in butterfat and is a good source of Vitamin A. It contains milk proteins, valuable for muscle growth and repair, as well as milk minerals, and is rich in butterfat.



- Two of the large, glass-lined, brine-cooled tanks in a modern cheese plant. The fresh, sweet milk is held in them during the few hours which must elapse before it is made into cheese.

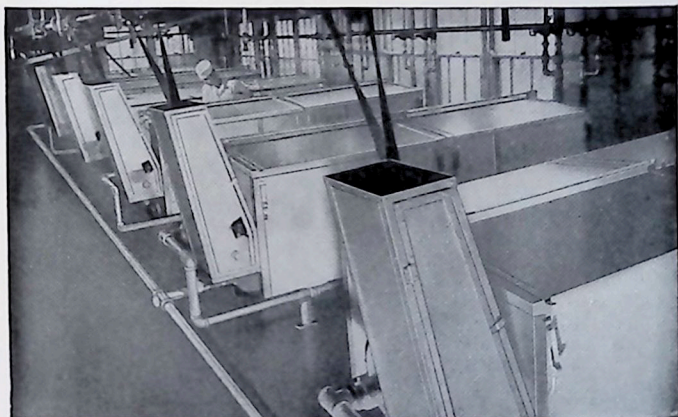


Modern knowledge of foods and nutrition has brought Cream cheese to the fore as a wholesome and delicious food for every member of the family. Its versatility has made it practically a staple in millions of homes, in almost daily use for luncheon, dinner, supper . . . and even for breakfast. Americans enjoy Cream cheese in hundreds of ways, from the delightfully simple "Cream cheese and crackers" (with or without jam or jelly), through almost endless salads to luscious pies and sandwich loaves, frosted with its smooth richness.

Long a favorite of children, Cream cheese is good for them, too, and offers a solution to the sometimes perplexing problem of getting them to consume their full quota of "milk nourishment" daily.

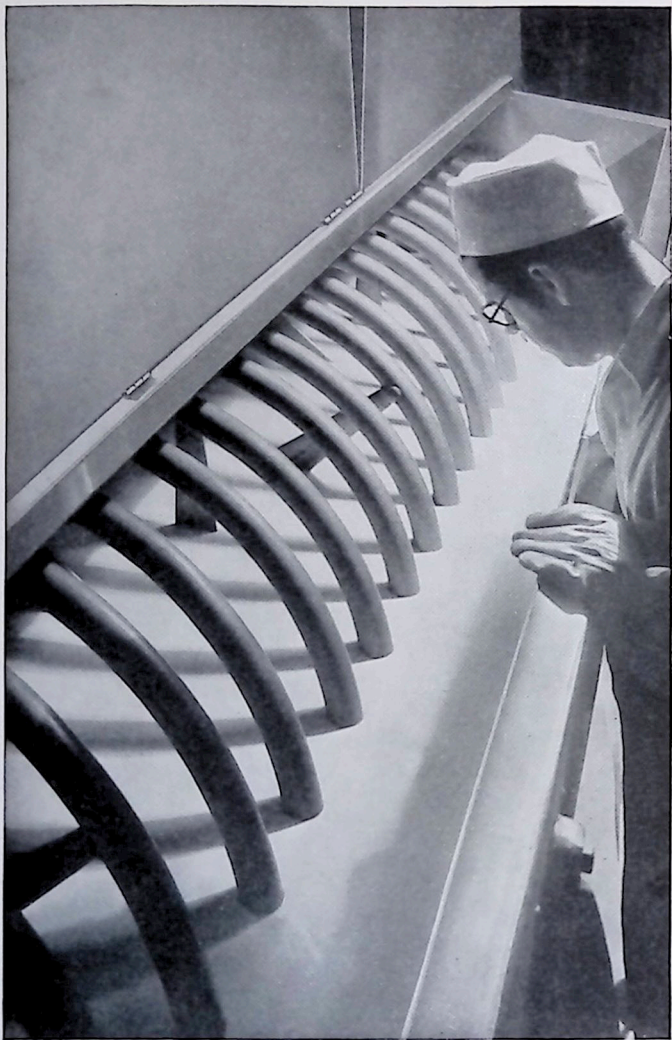
### Camembert

Camembert cheese first came into active notice during the reign of Napoleon, so the legend connecting him with the bestowal of its name may well be true. Since 1900 many attempts have been made to establish Camembert factories here in the United States, but most of them failed during the World War. Then, under the spur of necessity, and with data gained from experiments made by the U. S. Department of Agriculture, factories were reestablished with the result that the Camembert cheese produced here now rates very high in quality. If Roquefort can be called the King of Cheeses, then the more delicate and deliciously flavored Camembert can be truly spoken of as the Queen.



- A battery of pasteurizers in a "Philadelphia Brand" Cream Cheese plant. In them fresh, sweet milk and rich cream become soft, velvety curd ready to be drained, chilled, pressed and packaged.

• A peek inside a pasteurizer during Cream cheese making. The coils are hollow. As they revolve, live steam passes through them until milk and cream reach pasteurization temperature.





In the making of Camembert cheese, more than the ordinary care must be taken to secure exactly the right conditions favoring the growth of the peculiar organism which makes this cheese what it is. Very frequently cultures of this organism are secured from dairy laboratories to make sure that the characteristic growth of mold is induced.

The latter stages of ripening take place after the curd is wrapped in foil and placed in the round box in which it is marketed. When ripe the cheese is covered with a light grayish-green mold, sometimes with reddish masses directly in this mold. Inside the mold, the cheese is softened all the way through, to about the consistency of soft butter. In color it is rich and creamy.

### Brie

Brie is a soft rennet cheese made from cow's milk. This cheese has been made in France for several centuries, being mentioned in records long before the time of Columbus. It is made throughout France, though often used or sold under various local names, and is also made extensively in the United States. The method of manufacture is considerably like that of Camembert. This cheese has a very pronounced odor and a sharp, characteristic taste.

### Coulommiers, Pont-l'Eveque and Liverot

These three are somewhat like Brie, the shades of difference being



- "Philadelphia Brand" Cream Cheese is automatically packaged by machines almost human in their ingenuity. A battery of machines like those shown in the photograph is employed in each of the many plants where "Philadelphia Brand" Cream Cheese is made fresh daily, then rushed to market by fast service cars.

known in France where they are made. For us it is enough to know to what general class they belong so that we can try them when we have the opportunity.

#### Neufchatel

Neufchatel is of French origin, largely replaced in the United States by Cream cheese. It is made of all grades of milk, the finest from whole milk, but usually from skimmed or low grade milk which cannot be used otherwise in cheese-making. Among the various names for Neufchatel cheese from whole milk or with added cream are Petits Bondons, Malakoffs, Carres Affines. Among low fat or skim forms are Petit Suisse, Gournay.

#### Cottage Cheese

So familiar as to require little comment, Cottage Cheese is made by permitting milk or skim milk to sour, and heating to separate the curd from the whey. In commercial practice, carefully cultured starters are employed to curd the milk and the Cottage cheese is sometimes enriched with cream, being marketed in fiber containers, crocks, glasses and a variety of containers.





# More About Cheese Varieties, Foreign and Domestic

SOME varieties of cheese are ripened and allowed to dry out to such an extent that it is practically impossible to cut them. These are grated and used principally in cooking. Most of the imported Italian cheeses are of this type.

## Italian Cheeses

Caciocavallo originated in southern Italy, although it is made now in nearly all parts of that country. A limited amount is also made in a few factories in New York and Ohio, although this is usually not esteemed so much of a delicacy as the imported. This cheese is made somewhat like Cheddar except that the "matting" is not permitted, and the curd is heated to a high temperature by having the boiling whey poured over it, after which it is allowed to ferment for a number of hours, then suspended from the ceiling and lightly smoked, the surface being rubbed with olive oil or butter. Caciocavallo is shaped like a tapering beet-root, a constriction near the top being caused by the string which is tied around it to hang it up. This cheese is sometimes eaten when comparatively fresh, but is more frequently kept for months, until hard, then grated and used in cooking.

Provoloni is also an Italian cheese made much like Caciocavallo, the main difference being the shape of the cheese. It is more or less round and is held by a coarse net made of small rope.

Parmesan is an extremely hard type of cheese made usually from part-skim milk, a product of Lombardy, Italy. Across the river Po, in the province of Emilia, is made a very similar type of cheese, but of better quality, called Reggiano. The best of these cheeses are cured for two years before grating, for use in flavoring soups, macaroni, etc. They are a dark green or black outside, sometimes with streaks of greenish color inside. A considerable quantity of these cheeses is imported into the United States and sells at a high price.

Both Provoloni and Reggiano cheese have been produced in Argentina also and are exported in small quantities to the United States. The latter is called Regianito, to distinguish it from the Italian product. Two other

Argentine cheeses imported here are Goya, much like Regianito, and Sbrinz cheese.

To return to Italian cheeses, Gorgonzola is a rennet cheese made from fresh cow's milk. It was originally produced in northern Italy, near the town of that name, a few miles from Milan. Now, however, the manufacture has spread to other parts of Italy. When imported into this country, the Gorgonzola cheeses are coated with what appears to be a layer of clay, but is really a mixture of barites, tallow or lard, applied to prevent shrinkage or undesirable mold growth after curing. The Gorgonzola is marbled with streaks of mold, like the English Stilton or French Roquefort. When ripening, it becomes slimy at the surface. To open up air spaces for mold growth, this slime is scraped off and holes are punched into the cheese. These holes are plainly to be seen in the finished cheese. The excellence of flavor and the quality of this cheese are often marred by growth of undesirable bacteria.

Romano is a special variety of Italian cheese with a sharp flavor. It originated in the Campagna Romano at the foot of the Apennine mountains. It is a black-coated, hard, dry, very salty cheese, which requires curing for about eight months before it is ready for market. Genuine Peccorino Romano is made from pure sheep's milk in the Roman district. Another product called Sardo Romano is also very popular and sells at a slightly lower price; this is also made from pure sheep's milk and comes from the island of Sardinia. There is also a Romano cheese, made from cow's milk, which is known as Vacchino Romano. This cheese, like Parmesan, is used grated.

#### Roquefort Cheese

Roquefort cheese is made from sheep's milk. As told elsewhere, this is a French cheese, ripened in the famous caves of Roquefort, France. These caves were originally natural caves extending far back into the face of a cliff until they reached a deep, narrow crack in the rock leading to the plains above. The cooler air from the plains came down this crack over moist dripping rocks, producing an ideal temperature for ripening this particular cheese. Owing to the immensity of the business, artificial caverns have been hollowed out back of these natural caves to provide sufficient room for the ripening of the thousands of pounds of Roquefort produced each year.

One of the most striking characteristics of this cheese is the mottled or marbled appearance of the interior, due to the development of a blue-green mold known as *Penicillium Roqueforti*, which is introduced into the curd by sprinkling it with moldy bread. The bread used is prepared from wheat and barley with the addition of whey and a little vinegar. It is thoroughly baked and kept in a moist place from four to six weeks during which time it becomes permeated with this particular mold. After the bread is mixed with the curd and the cheese starts ripening, holes are punched in it to admit the air and thus favor the growth of this particular mold inside the cheese.



Roquefort is a semi-soft rennet cheese of open texture, with a very strong odor and taste. It is highly prized by connoisseurs of fine cheese, and is known principally as a dessert cheese. Many stores carry the original loaf, selling "cuts" from it.

#### Bleu Cheese

Roquefort cheese is made and cured in Roquefort, France, from the milk of sheep, but a similar type of cheese made of cow's milk is produced in many other sections of the world. One of these, called Bleu cheese, is produced widely in the south of France and in Denmark. Others of similar type are Gex and Septmoncel.

A successful cheese of this type made from cow's milk is being produced today in small quantities in the United States. Much of the early experimentation in this country was done by the Department of Agriculture at Grove City, Pennsylvania. Iowa State College at Ames, and the University of Minnesota are continuing this work.

#### Stilton

Stilton cheese, like the Gorgonzola and Roquefort varieties, owes its



- Imported French Roquefort cheese. The foil-wrapped "portions" (in the foreground) are becoming increasingly popular because of their convenience for table service. Portions are available in several sizes.

piquant flavor to the development of the characteristic green mold in the cavities of the cheese mass. This was originally made near the village of Stilton, England, about the middle of the 18th century. It is now made principally in Leicestershire and West Rutlandshire, although its manufacture has spread to other parts of England. Attempts have been made to manufacture this cheese in Canada and the United States but with indifferent success. It is generally improved by age and to be enjoyed at its best, should not be eaten before it is two years old.

### Pineapple Cheese

The fancy Pineapple cheese, popular in some markets of the United States, is simply an American Cheddar cheese which has been cooked much harder than ordinary and, after pressing, is dipped into warm water for a few minutes, then hung up to dry and ripen in a close-meshed net. It is the net which makes the diamond-shaped corrugations on the surface which, with the pineapple shape, makes it so attractive. As it ripens, linseed oil is rubbed on the surface and finally a coat of shellac, which



• Popular Dutch cheese varieties. Edam (front center); Gouda (front left); Baby Gouda (front extreme right); Leyden (rear right); Block Edam (rear left). Their decorative quality adds to their vogue.



prevents cracking and at the same time gives it a smooth, glossy exterior. This cheese is said to have had its origin in Litchfield, Connecticut, about 1845.

### English Dairy

English Dairy is another Cheddar type, sought by makers of Welsh rabbits because of its high flavor. It is harder than our American Cheddar cheese, the yield being only about 7.25 pounds from 100 pounds of milk. It grates well, a quality which makes it worth its somewhat higher price to the chef who wishes to use it for *au gratin* dishes.

### Cheshire

Old Chester, England, might not be so well known except for this cheese, first made there, and molded in the form of the famous "Cheshire cat". Nowadays it is made into a huge cylinder, about 15 inches in diameter, weighing 50 to 70 pounds. It is a Cheddar type, colored a deep yellow with annatto, and usually ripened for an extended period during which its sharp flavor develops.

### Dutch Cheeses

Dutch cheeses are made from whole or part skim milk, indicated by the butterfat content of the finished product.

Made essentially by the same method as American Cheddar cheese, the several types of Dutch cheeses are distinguished chiefly by their unique shape and color, although they are slightly sweeter and milder than Cheddar. Edams are the distinctive product of the Dutch community centering about the city of Edam, Holland, whereas Goudas are their South Holland counterpart. The large roundish Goudas (gowdas) and the smaller cannon-ball shaped Edams claim distinction in the cheese world by their brilliant red rind, imparted by dipping the cheese in an alcoholic solution of carmine until they acquire the desired shade of red. Perhaps less well-known than round Edams are Block Edams which, while of about the same weight, are molded in block or brick form.

Kosher Goudas are made in accordance with Hebrew dietary laws.

Baby Goudas are, as the name implies, miniature Goudas, whereas Spiced Leyden is practically Edam cheese with caraway seed. This latter variety is similar to the Norwegian Nokkelost.

### Scandinavian Cheeses

The types of cheese made by the Scandinavian races really deserve to be placed in a class by themselves. Many of these are made from whey.

Gjedost might be called the national cheese of Norway, being peculiar to that country alone. This is a goat's milk cheese, very dark chocolate-brown in color, and sweetish to the taste. It is too hard to be sliced, so must be shaved in thin portions and when served has for a running mate a very hard cracker.

Gammelost is another Norwegian cheese, made from skimmed, soured milk. It is an aged cheese, with a pungent odor.

Myost, sometimes called Primost, is another whey cheese produced in Norway, Sweden and Denmark. This has a light brown color, a buttery consistency, and a very mild flavor.

Appetitost, a Danish cheese, may properly be classed with the above varieties. It is made from sour buttermilk and is very popular among Danes everywhere. None is imported at the present time, as enough is made in the United States to supply the demand.

Nokkelost is a Scandinavian variety made from partly skimmed cow's milk with spices (such as caraway seed) added.

### **Semi-Hard Cheeses**

The foregoing comprise the varieties of hard cheese most often found in markets and the ones which are best known to us. Now we come to a different type of cheese, which we characterize as semi-hard.

#### **Limburger**

Limburger is one of the best-known varieties of this type. The best grade of Limburger is made from whole cow's milk, although part-skim or skim milk is used for inferior grades. It originated in the Province of Luttich, Belgium, but was first marketed in Limberg, hence its name. Its manufacture has spread to other parts of Europe, notably Germany, as well as to the United States, where large quantities of it are made both in New York and Wisconsin.

The manufacture of Limburger cheese requires greater care, and more constant and unflinching attention to all details of cleanliness, than any other variety of cheese, with the possible exception of Camembert.

Limburger cheese is made from sweet whole milk and is made and cured under ideal sanitary conditions. The difference between this cheese and Cheddar cheese is brought about by bacterial action during the curing period. In the manufacture of Cheddar cheese, the whey is pressed out of the curd, while in Limburger the only whey that leaves the curd is by natural drainage. It takes from 8 to 11 weeks to cure a piece of Limburger, during which time personal care and supervision is given to each single piece of cheese. Limburger cheese is usually made in three sizes—the familiar stones, weighing about 2 pounds each and 1 pound each, respectively, and the "Little Gem" which weighs about a half-pound. This new size is becoming quite popular and serves those who wish to consume the entire home supply at one sitting.

Unlike the Cheddar process, the curd is usually not cooked, although sometimes it is necessary to raise the temperature to about 98° F. to expel excess moisture. The characteristic pungent flavor is developed during the ripening process, which requires at least two months before



it is complete. During this time, the color of the outside of the brick changes from a whitish to a yellowish and even reddish brown.

The strong odor seems to be confined almost entirely to the rind so that when this is taken off and the Limburger is packed in tins or foil packages, most of the really delicious flavor is retained, while much of the odor is lost. Many Limburger devotees now use the pasteurized-blended process Limburger exclusively, purchasing it either in the half-pound or quarter-pound package or in the glass jar.

#### Brick and Muenster

Both Brick and Muenster are made in much the same manner as Limburger. Brick cheese probably gets its name from the size and shape of the finished product. In process of manufacture, it is midway between that of the Limburger and Cheddar types. As in the case of Limburger, it is the change taking place during curing which determines the characteristic flavor. During curing the surfaces of the cheese are kept moist, and undesirable mold growths prevented by rubbing the cheese with salt water. About four to six weeks are required for perfect curing.

Good Brick cheese should be neat and attractive with clean-cut lines and unbroken rind. It should have a clean, sharp characteristic Brick flavor, with mellow body and smooth texture. As in the case of Limburger,



- Chantelle Cheese, a new and distinctive type of cheese made in America. A light-golden cheese with a bright red jacket.

pasteurized-blended process Brick cheese in package form has become increasingly popular and the larger proportion of those who favor the Brick variety now purchase the home supply in this convenient, sanitary form.

Muenster cheese originated in Germany near the city of that name but there is a limited quantity made in America. The method of manufacture is much like that of Limburger and Brick cheese in temperature used, firmness of curd, amount of moisture, time of curing, etc. The cheese is often made by Limburger factories in the late fall and winter when it is difficult to manufacture Limburger.

#### Hand Cheese

Hand cheese derives its name from the fact that it was originally molded by hand to its final shape. It was developed in Germany originally and is very popular among the Germanic races, wherever they may be. Much of it is made in Pennsylvania, New York and Wisconsin. This cheese has a very sharp, pungent odor and taste which is disagreeable to most people not accustomed to it.

In the same classification as the preceding varieties but of a considerably softer body, is Liederkranz, which has become widely known in America. It resembles Limburger somewhat in flavor, although it is much softer in body.

#### Chantelle Cheese

Chantelle Cheese (pronounced Shan-TEL) is a light-yellow cheese with a bright red jacket, made in America. The flavor is similar to the famous Port du Salut of France — rich and full. The texture, too, is like Port du Salut — smooth and semi-soft. Chantelle represents a type of cheese that is becoming more and more popular in America.





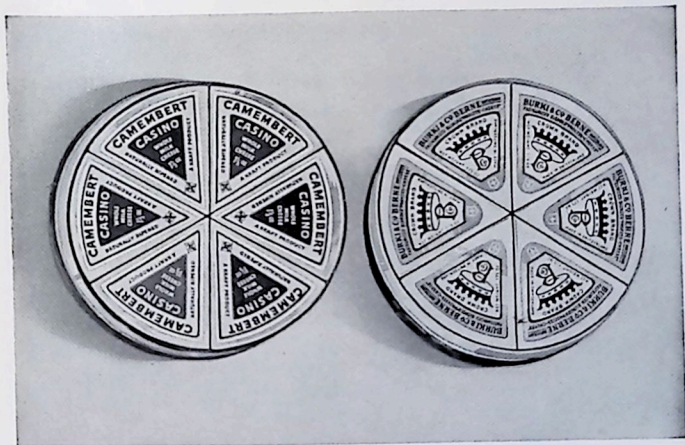
## Alluring Variety

A list of the types of cheese to be found in the modern cheese department of a food shop reads like a pronouncing gazetteer.

Cheese by its very nature and antiquity among foods, by its wide variety and international reputation, has always appealed to the imagination of the food-lover. Modern packaging has made the display of cheese in variety even more appealing to the eye. Buyers have learned to depend on the unvarying quality and excellence of cheese in package form.

Although Americans in general were once familiar only with the Cheddar type of cheese, they have learned in later years to know and appreciate many different types of cheese. The food shop's cheese department, with its interesting and varied display, is helping in this task of national education.

Familiar packaged process cheeses, available everywhere in several different size packages, are American Cheddar, Brick, Pimento, Swiss and Limburger. In the five-pound Loaf, half-pound and quarter-pound packages, they have been a familiar sight on grocers' shelves for many years. Newest of the attractive packages to join this popular group are the Family Size two-pound Loaf and the one-pound Loaf. The recent development



- Camembert cheese (at left) and Swiss Gruyere cheese (at right), two of the more unusual types of cheese which are widely popular in the United States. They are obtainable "whole" or in "portions".

of a new transparent wrapper suitable for cheese, after many years of research and experimentation, marks another important forward step.

"Philadelphia Brand" Cream Cheese, in the familiar three-ounce package, is the largest-selling packaged cheese in the world. Cream cheese spreads, in a variety of flavors, packed in re-usable glasses, are widely known and used. Grated cheese in shaker cartons is available everywhere today.

Camembert, "Coon" cheese, American Cheddar cheese in all types and sizes, block Swiss, Brick cheese, Pineapple cheese, Muenster, Limburger are among the American-made cheeses to be found in most American grocery stores. In most markets today are found also a wide variety of imported cheeses—Roquefort, Gruyere Swiss, Bleu cheese, Edams, Goudas, Romano, Reggiano, and Gorgonzola.

### Average Composition of Cheese Varieties

Name	Water	Fat	Protein, Amids, Etc.	Lactose, Lactic Acids, Etc.	Total Ash	Salt (NaCl) in Ash
Brick.....	42.47%	30.66%	21.05%	.....	2.98%	.....
Brie (French).....	50.04%	27.50%	18.34%	.....	4.12%	3.22%
Caciocavallo.....	23.58%	25.49%	29.25%	.....	7.63%	3.39%
Camembert.....	47.88%	26.32%	22.21%	.....	4.11%	.....
Cheddar (American).....	34.70%	35.60%	25.00%	0.61%	3.50%	.....
Cottage.....	69.82%	1.03%	23.26%	.....	1.91%	.....
Cream.....	36.49%	(40-50) 56.08%	5.28%	1.27%	0.82%	.....
Edam.....	38.07%	22.65%	30.89%	.....	6.19%	.....
Gorgonzola.....	33.77%	32.68%	25.95%	1.44%	4.44%	1.83%
Limburger.....	35.64%	29.82%	28.53%	.....	5.98%	.....
Muenster.....	44.26%	27.41%	17.92%	7.84%	4.86%	3.70%
Neufchatel (Domestic).....	59.22%	18.17%	21.30%	.....	2.43%	.....
Parmesan.....	27.93%	22.65%	41.94%	.....	6.07%	1.70%
Port du Salut (Oka—Trappist)...	42.98%	25.57%	24.61%	.....	3.93%	1.74%
Roquefort.....	38.69%	32.31%	21.39%	.....	6.14%	.....
Stilton.....	27.58%	37.87%	27.33%	2.23%	3.42%	.....
Swiss (Emmenthaler).....	33.91%	30.61%	29.22%	.....	4.16%	1.85%





• Well known varieties of packaged cheese and cheese products, including the popular pasteurized process cheeses. "A cheese variety for every taste".

## —Bibliography—

### Book Material:

- "The Book of Cheese"  
*by Charles Thom and Walter W. Fisk*
- "The Practice of Soft Cheesemaking"  
*by Charles William Walker-Tisdale*
- "Manual of Milk Products"  
*by William A. Stocking*
- "Cheese Making" (Cheddar, Swiss, Brick, Limburger, Edam, etc.)  
*by John W. Decker, Madison, Wis.*
- "Cheshire: Its Cheese-makers"  
*by Edmund Driver*
- "Cheesemaking in Switzerland"  
*by J. H. Monrad*
- "The Story of Milk"  
*by John D. Fredrikson*
- "A Book of Food"  
*by P. Morton Shand*
- "Who's Who in the Butter and Cheese Industry"  
*Urner-Barry Co., N. Y.*

### Pamphlet Material:

- "Report to the President on Cheese"  
*Library of Congress, Pamphlet No. 21, Series 2*
- "Cheese: A Treatise on the Manufacture of American Cheddar and Some Other Varieties"  
*by Lucius Lincoln Van Slyke*
- "Cheese—Canada"  
*Census and Statistics Bulletin,  
Dept. of Trade and Commerce*
- "Varieties of Cheese"  
*by Charles Francis Doane,  
Government Printing Office, Washington, D. C.*
- "Fancy Cheese in America"  
*by Charles Albert Publow*

United States Department of Agriculture Farmers' Bulletins on Cheese  
No. 1191, No. 1207, No. 1228.





